

Appendix II

A GUIDE TO REQUIREMENTS DOCUMENTS (SPECIFICATIONS, PURCHASE DESCRIPTIONS, AND STATEMENTS OF WORK)

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SECTION A

INTRODUCTION: DEVELOPING A REQUIREMENTS DOCUMENT

INTRODUCTION:

A "requirements document" contains a description of the technical requirements for a material, product, or service that includes the criteria for determining whether or not these requirements are met. Requirements documents take many forms but, are generally referred to as "specifications," "purchase descriptions," or "statements of work" depending upon what is to be acquired. See FAR Part 11.

WHAT IS A SPECIFICATION (PURCHASE DESCRIPTION)?

A specification is an exact description of a product or service, used in invitations for bids, requests for proposals and contracts to tell prospective suppliers precisely what ARS requires.

The nature of an item or service will determine whether specifications will be long or short and what descriptive format should be used. Regardless of length or format, however, the specification (purchase description) will define minimum requirements.

Object of a Specification

The object of a purchase description is to communicate to agency contracting personnel and suppliers what is required. The description provides the basis for judging whether or not the contractor has met requirements. The key word is communicate. The specification must be written in clear, unambiguous, and precise language to communicate effectively.

Why Is a Specification Needed?

Very simply, a specification is needed because it is the only way to obtain the goods or services required. It is the heart of a contract: the document that will govern the supplier of required goods or services in the performance of the contract as well as the basis for judging compliance.

WHAT IS A GOOD SPECIFICATION?

A good specification is one that sets forth actual, minimum requirements, as opposed to desires. It contains quality assurance provisions which provide a means of determining that the supplier has met contractual requirements. The well-written specification will be precise and clear. If requirements are not clearly and concisely stated, requisitioners may not get what they think they are asking for. If there is any ambiguity or room for interpretation, the contractors are entitled to make interpretations that work to their own advantage.

Here is an example of an ambiguous statement:

The contractor shall determine the metallic content of the water samples.

This statement will obtain only the total metallic content. If the actual requirement is a breakdown on each of the metals contained in the sample, there will be disappointment.

A better way of writing the requirement would be:

The contractor shall determine the amount in parts per million of each metal present in the water samples.

The second statement of the requirement is obviously more complete; it does not leave much room for interpretation. (It might also be necessary to state the accuracy that is required, the method of analysis to be used, and other details.)

In short, scientific knowledge is of little value when it comes to writing a specification unless your needs are expressed in succinct, accurate, understandable terms.

WHAT IS A PURCHASE DESCRIPTION?

A purchase description is used for items that are bought without significant repetition of acquisition. It is the most common ARS specification. The length and complexity of the purchase description is determined by the item or service being sought. In some cases it will run to considerable length and will actually duplicate the information and even the format which would be used in a specification for a complex system. At the least, a purchase description must contain both a description of the requirements and the quality assurance provisions. For simple items, this description may consist of one or two paragraphs.

What is a Brand-Name-or-Equal Description?

Brand name or equal is a unique type of purchase description with its own particular procedures and requirements. The brand-name-or-equal product description is probably one of the most abused formats, periodically causing great inconvenience to the Government. Acquisition regulations require that offerors of other than the name brand must submit data to show the equality of the products being offered. The purchase description originator assesses submitted data to determine equality. This determination should be based on whether the offer meets "salient characteristics" set forth in the solicitation. It is in this area that considerable differences in opinion arise as to what is salient and whether an offered "equal" does or does not meet salient characteristics. Many bid protests that reach the General Accounting Office (GAO) are a result of brand-name-or-equal acquisitions.

The brand-name-or-equal purchase description should include the common generic identification of the item, the make, the model or catalog number, and the name and address of the manufacturer. It must also include an itemization of the salient characteristics and of performance or other criteria that are required of the brand-name product. If dimensions are a part of the criteria, they should be given. If there are methods or materials that are precluded, they should also be set forth so that offerors are aware of these conditions prior to going to the expense of bidding.

A brand-name-or-equal description should only be used to purchase a standard item, available off the shelf, for which complete definition is impractical.

What is a Statement of Work (Work Statement)?

A statement of work is a variation of the purchase description which applies to the acquisition of services or the development of hardware. Here again, it is the contractual vehicle for expressing exactly what services are required and for evaluating the product of a supplier. Special knowledge of the subject must be used in deciding the content of the work statement. The key elements are the same as those for any specification, with the added requirement of a statement of where the work is to be performed. The work statement must deal with these basic questions:

- What needs to be done?
- Where should it be done?
- What should the final output consist of?

In some cases the work statement may also define how the work is to be accomplished. Many work statements are complex in that, because they require the use of special equipment or outputs, they must provide data in specific formats for future processing.

WHAT IS A REQUISITION (PROCUREMENT REQUEST)?

A requisition or procurement request, with attachments, is the official document that identifies a specific requirement. It is prepared by the program or project office which identifies the requirement, and it must be sufficiently detailed and complete to enable purchasing and contracting personnel to begin acquisition planning and scheduling.

Specification or Statement of Work

Preparation Checklist

1. If background or other introductory information is to be included, is it distinguishable from the contract objective and the contract tasks?
 2. Are specific duties of the contractor stated so that requirements are clear? Can the Contracting Officer's representative, who monitors performance and signs the acceptance report, tell whether the contractor has complied?
 3. Are all parts of the specification or statement of work written so that there is no question as to what the contractor is obligated to do, and when?
 4. When it is necessary to refer to another document, is the proper reference document described? Is it properly cited? Is all of it really pertinent to the task, or should only portions be referred to?
 5. Are any specifications or exhibits applicable in whole or in part? If so, are they properly cited and referenced in the appropriate statement of work element?
 6. Are proper quantities shown?
 7. Have all requirements for data been specified separately in a data requirement appendix or its equivalent? Have all extraneous data requirements been eliminated?
 8. Is the specification or work statement sufficiently detailed so as to permit equal understanding by all offerors? Are there qualification requirements? Are these requirements adequately defined?
 9. Are reporting requirements clear? Have the timing, content, and level of detail been specified?
-

Hardware Description Checklist	Services Description Checklist
___ APPROVAL	___ WORK
___ MATERIALS	___ What
___ Required	___ How
___ Excluded	___ Where
___ Special	___ When
___ DESIGN	___ PHYSICAL
___ Size	___ Interface
___ Shape	___ Materials
___ Weight	___ Equipment
___ Fit	___ Tools
___ Interface	___ PERSONNEL
___ Human Engineering	___ Labor Categories
___ Marking	___ Quantity
___ Workmanship	___ Experience
___ PERFORMANCE	___ Education
___ Input ___	QUALITY ASSURANCE
___ Function	___ Inspection
___ Output	___ Examination
___ Environment	___ Sampling
___ Reliability	___ DELIVERABLES

SECTION B

SPECIFICATIONS OR PURCHASE DESCRIPTIONS

BASIC REQUIREMENTS OF SPECIFICATIONS OR PURCHASE DESCRIPTIONS

Common sense judgments of variations in product characteristics, use, and dollar value will dictate the format and coverage of purchase description or specification details. However, the implications of the principles set forth in the checklist below apply to every acquisition.

Basic Requirements Checklist

-
1. Items to be delivered, together with quantities, delivery schedule, and cost estimate.
 2. Purpose and intended use of items to be acquired, including a general description of how requirements evolved and the relationship, if any, to other projects. Background discussion that conveys an understanding of the scope of work involved, project duration, period of performance, and necessity for including specific requirements or characteristics is set forth here.
 3. Application of any referenced specifications or standards or qualification requirements which are intended to qualify the item descriptions or the use of the items when delivered.
 4. Specifics regarding the environment within which the items will be utilized, set forth in detail. Factors such as altitude, topography, location, availability of repair facilities, exposure to physical or chemical influences, and all other significant potential impacts on performance should be enumerated.
-

DETAILED REQUIREMENTS OF PERFORMANCE SPECIFICATIONS OR PURCHASE DESCRIPTIONS

Whenever possible, performance specifications should state what the item is to do rather than bog down in technical detail. Performance details should include such items as:

- Output in terms of available power, velocity, production per minute, area of coverage, depth of penetration, etc.
- Capacity in terms of total load, cubic content, etc.
- Dimensional limitations
- Hardness
- Maneuverability
- Degree of tolerance or accuracy
- Weight limitations
- Resistance to external physical and chemical influences
- Other properties or qualities that have to do with how the item should perform.

Particular care must be taken to consistently use performance-level details. For example, if the speed or capacity of a machine is stated, the horsepower of the power unit required would not be specified. Rather, a performance need would be stated: The power unit is to have sufficient capacity to operate the machine at stated speeds under stated loads. Whenever performance details are specified there will also be a need to state the type of inspection or test that will be used to determine if the item furnished meets the performance requirements of the specification.

QUALIFICATION REQUIREMENTS

ARS Purchasing Agents and program personnel should be aware that federal policy generally discourages the employment of Qualified Products Lists (QPL) and other such "qualification requirements" which require testing or other quality assurance demonstrations which must be completed by a vendor as a condition for award. Consequently, prior to enforcing any such requirements, certain actions are required. They include the following:

- @ Prepare a written justification stating the necessity for qualification and why the requirement must be met prior to award.
- @ Make available to potential offerors a written description of all qualifications to meet.
- @ Specify an estimate of costs to the potential offeror for testing and evaluation.
- @ Provide offerors a prompt opportunity to demonstrate, at their own expense, their ability to meet the standards for qualification.
- @ Promptly advise offerors as to achievement or non-achievement of the qualification requirements.

In the event that requisitions which stipulate such qualification requirements are received, the Purchasing Agent should seek advice from the next higher contracting official prior to proceeding with the purchase.

SPECIFYING TECHNICAL DATA REQUIREMENTS

Contracts for property or services wherein technical data is to be acquired must contain the following provisions (Purchasing Agents should seek advice from higher contracting authority):

- @ Definition of respective rights of the Government and contractor to technical data to be delivered.
- @ Specific description of data to be delivered and the delivery schedule. Each item must be identified as a separate contract line item.
- @ Procedures for determining the acceptability of technical data to be delivered.
- @ Provisions relating to the revision and delivery of technical data delivered under the contract.
- @ Requirement for the contractor to warrant completeness, accuracy, and conformance with contract requirements.
- @ Establishment of remedies available to the Government (including withholding of payments where appropriate) in the event the technical data is inaccurate, incomplete, or is not otherwise in conformance with contract requirements.

GOVERNMENT-FURNISHED MATERIALS

A performance specification should clearly identify any materials to be furnished by the Government for incorporation or use by the contractor, with a stipulation therein that title remains in the Government and that all property not consumed in the performance of the contract will be returned upon contract completion. Ordinarily, no bond or insurance coverage is required. However, when the value of the material is substantial, a requirement for insurance may be incorporated in the specification. In any case a contract should contain an appropriate provision to establish the extent of contractor financial liability for any loss or damage to Government-furnished property.

PACKAGING/PACKING

Commercial practices should be followed whenever practical in provisions relating to marking, shipping, and packing materials. Any special requirement should be specifically noted for the bidder's attention. Provision should be made for special instructions and warning notices on packages and shipping containers if toxic, flammable, explosive, or other dangerous materials are involved.

CRITERIA FOR EVALUATION

Any criteria, other than price, to be used in evaluating quotes should be clear and exact. They must be stated when requesting quotations with sufficient clarity and exactness to inform each quoter of the factors which will be used in evaluating a quote in relation to others. This statement enables quoters to estimate, within reasonable limits, the effect of the application of the evaluation to their quotation. Factors such as award in the aggregate, estimated quantities, and delivery time when the need is urgent, together with liquidated damages in case of delay and any other circumstances which may cause the award to be made in an "unusual" manner, must be set forth in the request for quotations or invitation for bids.

INSPECTION AND TESTING PROVISIONS

The method to be used to determine if items furnished meet contract specifications should be clearly set forth. This step is particularly necessary when service requirements and performance details are relied upon as the specification that describes Government needs. Although not part of the specification itself, advance arrangements should be made for adequate inspection and testing.

BASIS OF PAYMENT

If the specification contemplates elements of a service nature or deliveries extending over a considerable period of time, the basis on which payment will be made for the services performed, or on which deliveries will be made and accepted, should be set forth in the contract.

LANGUAGE

- @ Short sentences, simple words, and direct and positive statements should be used.
- @ Technical words or phrases should be avoided, except when recognized in the trade as having a definite meaning.
- @ Trade terms must be used in their common or local meanings.
- @ The same words, not synonyms, should be used throughout the description.
- @ Abbreviations and acronyms should be avoided unless spelled out when first used.

DETAILED DESCRIPTIONS

Detailed descriptions include physical characteristics (weight and dimension limits, design and construction details, and any other detailed requirements) of a product. For services, details applicable to the service being obtained must be set forth. Some or all of the following items may need to be considered.

Physical Characteristics

These characteristics in a product or material specification set forth requirements, such as weight limits and dimensional limits, which are necessary to assure physical compatibility with other elements and are not determined by other design and construction features. They also include considerations such as transportation and storage requirements, security criteria, durability factors, health and safety criteria, and vulnerability factors.

Protective Coating

Where applicable, protective coating requirements are specified to assure protection from corrosion, abrasion, or other deleterious actions.

Transportability

State any special requirements for transportability and handling of materials.

Design and Construction

Essential requirements that are not controlled by performance characteristics or interface requirements can be specified. These requirements might include appropriate design standards; requirements governing the use of selection of materials, parts, and processes; inter- changeability

requirements; safety requirements and the like.

Materials

Requirements for materials to be used in the item or service covered by the description.

Toxic Products and Formulations

Description requiring or permitting toxic products and formulations must demand compliance with the requirements of regulations governing such products and formulations.

Electromagnetic Radiation

When applicable, state requirements pertaining to electromagnetic radiation in terms of the environment which the item must accept and the environment which it generates.

Nameplates or Product Markings

In some cases the nameplate or markings may be the only means of identifying a product after delivery. Such identification is important from the standpoint of stock, replacement, and repair parts. All requirements pertaining to nameplates or markings should be included.

Workmanship

If applicable, reference to workmanship includes the necessary requirements relative to the standard of workmanship desired, uniformity, freedom from defects, and general appearance of the finished product. This paragraph is intended to indicate, as definitively as practicable, the standard of workmanship quality that the product must meet to be acceptable. The requirements must be worded to provide a logical basis for rejection in those cases where workmanship is such that the item is unsuitable for the purpose intended. Generally, no definite tests other than visual examination of workmanship will be applicable to the requirements of this paragraph.

Safety

This paragraph specifies requirements to preclude or limit hazards to personnel, equipment, or both. To the extent practicable, these requirements should be imposed by citing established and recognized standards. Limiting safety characteristics peculiar to the item should be included. These may pertain to hazards in assembly, disassembly, testing, transport, storage, operation, or maintenance, when not covered by standard industrial or service practices or the system specification. "Fail-safe" and emergency operating restrictions should be included when applicable. These include the interlocks and the emergency and standby circuits required to either prevent injury or provide for recovery of the item in the event of failure.

Reliability Requirements

When reliability requirements are used, they are stated numerically with confidence levels, if appropriate, in terms of hardware mean-time-between-failures. Initially, reliability may be stated as a goal and a lower minimum acceptable requirement allowed. Realistic requirements must be determined and incorporated into the description, with requirements for demonstration.

There are special cases in which reliability requirements might be applied to service contracts. Chemical analysis may require a certain accuracy with a specified confidence level. In this case it is necessary to know how this accuracy and confidence level will be established.

Environmental Conditions

Environments that the system of equipment is expected to experience in shipment, storage, service, and use must be specified here. Environmental conditions the equipment will be required to meet, or be protected against, must be specified when applicable. Subparagraphs to cover environmental conditions such as climate, shock, vibration, noise, noxious gases, etc., should be included as necessary.

For different equipment there will be different environmental requirements that are applicable. Consider which, if any, of the following apply.

Environmental Tests

Salt spray	Moisture resistance	Explosion
Humidity	Thermal shock	Sand and dust
Immersion	Life (at elevated	Flammability
Barometric pressure	ambient temperature)	(external flame)
		Sealing

Physical Characteristics Tests

Vibration	Life (rotational)	Terminal strength
Shock	High-impact shock	Acceleration
Random drop	Solderability	Shock (specified
Vibration, high	Radiographic inspection	pulse)
frequency	Resistance to soldering	Random vibration
Shock, medium impact		Resistance to solvents

Electrical Characteristics Tests

Dielectric with-standing voltage	Capacitance	Voltage coefficient
Insulation resistance	Quality factor (Q)	of resistance de-termination procedure
D.C. resistance	Contact resistance	Contact-chatter monitoring
Resistance-temperature characteristics	Current-noise test for fixed resistors	Life, low-level switching
		Intermediate switching

Remember that each requirement in this category could entail a verification test. The requirement should ask only for what is really needed to ensure that the material will be suitable.

RESPONSIBILITY FOR INSPECTION

Primary responsibility for quality assurance of delivered products, materials, or services is placed on the supplier, who is responsible for offering ARS only those products, materials, or services that conform to all specified requirements. However, where assembly of a system is at a ARS facility involving Government property and personnel, responsibility for the conduct of tests will probably be split between ARS and the contractor. Accordingly, the supplier's responsibility for inspection shall be clearly stated, and the Government's role, either as a partner or monitor, shall be specified. A typical statement of responsibility follows:

"Responsibility for inspection. Unless otherwise specified in the contract order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements."

Special Tests and Examinations

Any special tests, examinations, or associated actions required for sampling, lot formation, qualification evaluation, etc., should be presented under an appropriate heading.

What is done for a service? Quality assurance requirements still need to be incorporated, and this need is even greater since the finished product cannot usually be examined. Here is an example of how quality assurance requirements might be specified for a painting job:

"Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements specified herein. ARS reserves the right to perform any of the inspections set forth herein."

"Inspection and examination."

"Place of inspection. Inspection and examination of completed work and work in progress shall be at the job site."

"Notification of work progress. The contractor shall notify ARS or their designated representative at least three days in advance of the following stages of work:

- a. When surfaces will have been prepared for finish and prime painting.
- b. When final painting will have been completed."

"Materials. The contractor shall require paint suppliers to certify that the paint meets the requirements of this specification. Supplier's certification will be maintained on file by the contractor until the work is accepted. The file shall be available for inspection by ARS or their designated representative."

The above example establishes where the inspection will take place and requires the contractor to advise ARS when certain work stages can be inspected. It also puts a burden on the contractor to use the specified paint and extends this requirement to the paint supplier.

In this example, work in progress must be inspected on-site. For other types of services, the end product may lend itself to verification of acceptable accomplishment. In some cases it is desirable to duplicate a small percentage of the contractor's work to validate performance.

Preparation for Delivery

This section includes applicable requirements for preservation, packaging, and packing of the item and for marking of packages and containers.

Preparation-for-delivery requirements need to be carefully evaluated. The type of equipment, how it will be shipped, its destination, and available storage facilities will dictate the requirements that should be incorporated. The specific requirements for materials to be used in preservation, packaging, and packing a product are covered here.

SECTION C

STATEMENTS OF WORK

STATEMENT OF WORK GUIDELINES

1. Every statement of work that exceeds three or four pages should have a table of contents.
2. Clear and precise descriptions are essential. The preparer must realize that the statement will be read and interpreted by persons of varied backgrounds (such as lawyers, buyers, and engineers and specialists in production, transportation, quality assurance, finance, and contract management). A good work statement defines precisely the product or service desired. It affects administration of the contract because it defines the work to be performed.
3. It is most important to gauge the likely effect that the specifications, as written, will have on the reader. Every effort must be made to avoid ambiguity. All obligations of the Government should be carefully spelled out. If approval actions are to be provided by the Government, a time limit must be set.
4. Remember that any provision which takes control of the work away from the contractor, even temporarily, may result in relieving the contractor of responsibility.
5. Active rather than passive terminology should be used: "The contractor shall conduct a test" rather than "a test should be conducted." When a firm requirement is intended, the mandatory term "shall" rather than the permissive term "should" is needed.
6. Abbreviations should be limited to those in common usage. A list of all abbreviations and acronyms to be used should appear in the introduction. When a term is cited for the first time, it should be spelled out and the abbreviation or acronym shown in parentheses following the word or words.
7. When it is important to define a division of responsibilities among the Government, the contractor, other agencies, etc., a separate section of the statement of work (in an appropriate location) should be included.
8. Procedures for decision-making should be included. When immediate decisions cannot be made, it may be possible to include a procedure for making them (e.g., "as approved by the Contracting Officer," or "The Contractor shall submit a report each time required Government inputs are not received").

9. The statement should be specific. Depending upon the nature of the work and the type of contract, the preferred procedure is to specify results required (the performance" or "what-to" approach rather than the "design/detail" or "how-to" approach) and end items to be delivered and let the contractor propose his best method.
10. Requirements should be described in sufficient detail to assure clarity, not only for legal reasons but also for practical application. Some details may be overlooked; others may be repetitious. Beware of both. The specification "as necessary" should be avoided in reference to any piece of deliverable hardware, any report, or any immediate action. Rather, it should be specified whether the judgment is to be made by the contractor or by the Government. Be aware that these types of contingent actions may have an impact on price as well as schedule. Similarly, the phrase "as required" should be avoided. For example, in specifying where expensive services, such as technical liaison, are to be furnished, a ceiling on the extent of such services, or a procedure that will ensure adequate control (e.g., level of effort, pool or man-hours) should be provided.
11. Inspection and acceptance criteria must be clear and complete. The contractor can be expected to go by the wording of the document. If that wording does not clearly state not only the standards by which performance will be judged but also by whom, how, and within what period of time, the contractor may be absolved of responsibility for inadequate performance.
12. In-house information should be used. Old statements of work, if they are well written, can be a valuable resource when used in conjunction with information on the resulting contract. Where similar work has been done and the results were good, portions of that statement may be used as a guide to the one being prepared. Where problems later developed during performance, the old statement and the contract file may provide insights as to where greater detail is necessary.

SAMPLE STATEMENT OF WORK OUTLINE:

A. BACKGROUND INFORMATION

General description of the requirement

How the requirement evolved

Relationship of the requirement to other projects, if any

B. PURPOSE AND OBJECTIVES OF THE ACQUISITION

Overall program/project objectives

Specific objectives of this requirement

C. CONTRACTOR REQUIREMENTS

Specific tasks to be performed by the contractor and specific results or "outputs" to be achieved

Direction on any specific methodologies to be used

Applicability of specifications and standards (to be included in attachments)

Period of performance

D. GOVERNMENT RESPONSIBILITIES

Listing of any Government-furnished data, property, or facilities

Elaboration on Government responsibility for reviewing and approving reports and similar matter generated under the contract

E. REPORTING REQUIREMENTS AND DELIVERABLES

Progress, management, financial, and final report data requirements

F. PROGRAM MANAGEMENT AND CONTROL REQUIREMENTS

Internal management and control systems, either specified by the Government or to be developed by the contractor as a part of the Technical Report

G. INSPECTION AND ACCEPTANCE REQUIREMENTS

What is to be inspected and approved (performance indicators and standards)

Who is to inspect and approve

When inspection will occur

What procedures the Government will use

H. ATTACHMENTS

All relevant documents referred to in the statement of work

All specifications and standards the contractor must follow

NOTE: This sample format presents only one suggested outline of a statement of work. The important point is that all necessary elements be covered in a concise and logical manner. Common sense variations will relate to the dollar value of the acquisition and the nature of the product or service.

SOFTWARE WORK STATEMENTS

Work statements are used to obtain various types of software, such as computer programs, research, and documentation. They must answer the following questions:

- @ What will be provided to the contractor?
- @ What is the contractor to do?
- @ What is the contractor to provide?

A specification for the development of a computer program, for example, would need to define the following:

- @ Input
 - Data items
 - Data format
- @ Performance
 - Treatment and operations to be performed on data supplied
- @ Interface
 - Language to be used
 - Machine type or core size
- @ Output
 - Formats of program output
- @ Deliverables
 - Tapes, documentation, etc.
- @ Quality Assurance
 - Validation of program

Looking at the preceding example, one can see that the requirements almost automatically take the shape of a performance description. If you adequately define your requirements, the result will be a good description of what you need.

Suppose someone is to perform a variety of different but related services on an as-required basis; for example, both the writing of manuals and drafting. The problem of writing the specification still centers around defining requirements in a manner that permits the contractor to bid. If the amount of writing and drafting required are unknown, or if the specific documents to be produced are unknown, the specification must, essentially, define what is to be done.

If possible, the labor categories and any special equipment required to perform the work must be defined. The nature of the work to be performed as well as requirements for deliverables should be specified. If documents are on magnetic tape and the contractor must revise and update the tapes, it must be clear what these tapes are and what machines they drive.

At times, requirements on the personnel to be used, such as education or experience in related work, are desirable.

With only the information set out in the two preceding paragraphs, it is possible to advertise for a competitive procurement. The contractor can be asked to bid on the labor rates required, providing overhead rates and desired profit. The contract can be structured to allow the assignment of tasks as the need arises.

If it is possible to estimate a minimum number of hours required for each labor category, the result will be a better acquisition package and, probably, a lower price.